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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,680	10/17/2003	Tae-Woong Koo	30320/14575	2629

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EXAMINER	
SODERQUIST, ARLEN	

ART UNIT	PAPER NUMBER
1743	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/688,680	KOO ET AL.	
	Examiner	Art Unit	
	Arlen Soderquist	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4-4-05, 8-26-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 2-3, 32, 34-35 and 37 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 3-4, 32, 34-35 and 37 of copending Application No. 10/966,893. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keir in view of Liang and Kneipp (SPIE, 2000). In the paper Keir teaches Surface-enhanced resonance Raman scattering (SERRS) of a model derivatives of TNT was detected using a microflow cell designed within the framework of the lab-on-a-chip concept, using only the analyte and readily available reagents. The SERRS substrate, silver colloid, was prepared in situ, on-chip, by borohydride reduction of silver nitrate. The silver colloid was imaged within the chip using a white light microscope in either transmission or, due to the high reflectivity of the colloid,

reflection mode. A fine stream of colloid ~30 μm in width was formed in a 250-μm-wide channel at the point where the colloid preparation reagents met. The chip was designed to produce a concentrated stream of colloid within a laminar regime, such that particles did not readily disperse into the fluid. One result of this was to reduce the effective volume of analysis. Attempts to deliberately disrupt this stream with microstructured pillars, fabricated in the fluidic channels, were unsuccessful. The chip was also designed to have the appropriate dimensions for detection using a modern Raman microscope system, which collects scattering from a very small volume. A dye derived from TNT was used as a model analyte. Quantitative behavior was obtained over 4 orders of magnitude with a detection limit of 10 fmol. This performance is 1-2 orders of magnitude better than that achieved using a macroflow SERRS cell. The technique has the added advantage that both reagent consumption and effluent production are greatly reduced, leading to reduced operating costs and a decreased environmental impact. Keir does not teach using the coherent anti-Stokes method of producing Raman scattering.

In the paper Liang presents an experimental observation of surface-enhanced coherent anti-Stokes Raman scattering. Surface-enhanced coherent anti-Stokes Raman scattering has been observed on colloidal silver surface from benzene, the mixture of benzene and N,N-dimethylformamide, toluene, and chlorobenzene. Silver colloids which were prepared in organic solvent N,N-dimethylformamide were used as an enhancement medium. The scattered CARS light was collected at right angles with respect to the exciting pump and Stokes laser beams. It was found that not only is the CARS signal significantly enhanced but the signal-to-noise ratio is also improved after addition of the silver sol. An excitation profile study shows a maximum enhancement for the benzene-silver sol system located at about 500 nm pump laser wavelength. This is in good accord with the surface plasmon resonance of the system.

In the paper Kneipp discusses near-infrared surface-enhanced Raman spectroscopy of biomedically relevant single molecules on colloidal silver and gold clusters. Surface-enhanced Raman scattering (SERS) is a phenomenon resulting in strongly increased Raman signals from molecules which have been attached to nanometer sized metallic structures. The technique combines fingerprint capabilities of vibrational spectroscopy and ultra sensitive detection limits. Silver or gold colloidal clusters can provide total enhancement factors of about 14 orders of magnitude for non- resonant Raman scattering at near IR excitation. Since non-resonant near IR

photons are used, photodecomposition of the probed molecule is avoided or, at least strongly reduced, and relatively high excitation intensities can be applied. In addition to the Stokes Raman signal, that linearly depends on excitation laser intensity, at excitation intensities higher than about 10^5-10^6 W/cm^2 and 10^7 W/cm^2, 'pumped' anti-Stokes Raman scattering and surface enhanced hyper Raman scattering, respectively, can be observed. Both effects can provide a non-linear or two-photon Raman probe where the Raman scattering signal depends quadratically on the excitation laser intensity.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a coherent anti-Stokes detection method as described by Liang in the Keir method and apparatus because of its ability to be enhanced and because of the ability to have extremely large enhancements for anti-Stokes scattering with the proper selection of wavelength as shown by Kneipp.

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-49 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-49 of copending Application No. 10/966,893. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims differ by the number of molecules that are exposed or share a

large number of components that are identical in the Markush groups such that there is and abundance of scope overlap between the two application and it would be difficult to practice the one without also practicing the other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional art relates to surface enhanced Raman methods and their inclusion in or with capillary type flow apparatus and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (571) 272-1265. The examiner can normally be reached on Monday-Thursday and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arlen Soderquist
Primary Examiner
Art Unit 1743